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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,211	01/16/2002	Fred J. Cadieu	2830/11079US1	7210

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EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,211

Applicant(s)

CADIEU, FRED J.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 and 33-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-32 and 402 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/16/02 & 11/20/02
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claims 1-14 and 33-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in applicant's responses dated July 21, 2003 and Nov. 11, 2003.

Claims 27-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 27 recites a negatively charged deflector plate disposed along a second portion, and also recites that negatively charged species are repelled toward said second portion. This appears to be the reverse of what is described in applicant's specification, which describes the negatively charged species as being repelled by the negatively charged deflector plate. Also, claim 30 appears to not be in accordance with the specification, as "the substrate" apparently should be "the deflection magnetic device". Clarification is respectfully requested.

Claims 15-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 15 and 16 make reference to "the target", but it is noted that no target is positively recited in claim 15, only a target holder, and thus the claim limitations that are defined in terms of "the target" are indefinite. In claim 23, "the magnetic deflection member" lacks proper antecedent basis and should be

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changed to "the magnetic deflection device". In claim 30, "the substrate" is indefinite and should be changed to "the deflection magnetic device".

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-18, 21-26, 32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsui (Appl. Phys. Lett. 70 (15) pp. 1953-1955, April 1997) taken in view of Jordan (Applied Surface Science 109/110 pp. 403-407, 1997), Flynn (6,319,369) and Nagaishi (5,624,722). Tsui (see Fig. 1) discloses a magnetic field pulsed laser deposition (PLD) system comprising a target held by a target holder and a laser source producing a laser beam that is focused onto the target surface to produce a plume of laser ablated vapor material to be deposited on a substrate to form a coating on the substrate. A confinement magnet S1, with a magnetic field parallel to the plume direction, is placed proximate the target. A second magnet S2 which is a deflection magnet is arranged relative to the confinement magnet so that the focused plume discharged by the confinement magnet is deflected toward a substrate location. Tsui's magnets are a magnetic filter for removing undesirable particles. Tsui does not describe the deflection magnet as having a bend in it as claimed.

Jordan also discloses a PLD system equipped with a magnetic particle filter. Jordan's deflection magnet (see Fig. 1) has a bend in it. Also, Flynn is taken from the analogous art of arc discharge coating, in which magnetic particle filters are well known

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and commonly used. Flynn (see Fig. 1) teaches the use of both a confinement magnet 16 for focusing a plume of arc ablated vapor material, and a deflection magnet 23 having a bend in it for deflecting the vapor material to a substrate to be coated. It would have been obvious to one skilled in the art to modify the apparatus of Fig. 1 of Tsui by providing it with a deflection magnet S2 having a bend in it, because Jordan teaches that a deflection magnet with a bend in it can successfully be used to deflect and filter a laser ablation plume, and Flynn makes clear that a deflection magnet of the type having a bend in it, such as Jordan's deflection magnet, is compatible for use with a confinement and focusing magnet of the type used by Tsui as magnet S1. Flynn also teaches the use of a removable rough baffle surface 21 inside the deflection magnet for catching undesired particulate materials, and also the use of a deflection magnet having a double bend as recited in claim 40.

The limitations of claim 16 relating to a composition of a target represent a recitation of intended use, and are thus process-type limitations that do not so limit the present apparatus claims, because the claims as presently written do not positively recite a target.

Nagaishi is cited merely for his teaching (see col. 6, lines 12-13 and Fig. 6, for example) that it was well known in the art that a laser ablation plume is inherently emitted in a direction perpendicular to the target surface, even when the laser beam is at a sharp angle to the target surface. Therefore, one skilled in the art would recognize that the laser ablation plume of Fig. 1 of Tsui was inherently perpendicular to the target surface, and therefore the magnetic field of magnet S1 of Fig. 1 of Tsui is inherently

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parallel to the plume ejection direction as recited in claim 15. Also, Nagaishi illustrates the well-known expedient of rotating the target during the laser ablation process (see col. 6, lines 16-35), as claimed in applicant's claim 32, and it would have been obvious to one skilled in the art to provide means for rotating Tsui's target to avoid non-uniform consumption of the target as taught by Nagaishi (col. 6, lines 21-24).

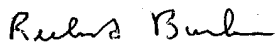
Claims 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsui (Appl. Phys. Lett. 70 (15) pp. 1953-1955, April 1997) taken in view of Jordan (Applied Surface Science 109/110 pp. 403-407, 1997), Flynn (6,319,369) and Nagaishi (5,624,722) for the reasons stated above, taken in further view of Meyer (WO 00/13201) or Yoshida (JP 5-279844). Meyer (U.S. 6,533,908) is a patent family equivalent of Meyer (WO 00/13201), and is relied on as an English translation. Flynn (col. 7, lines 14-15) teaches that a deflection magnet type particle filter can be used in combination with an electrostatic field, but does not discuss details of the electrostatic field means. Meyer (see Fig. 1) and Yoshida (see Fig. 1 and abstract) each teach the use of oppositely charged electrode plates to filter a laser ablation plasma plume. The electric field is perpendicular to the plume direction. It would have been prima facie obvious to one skilled in the art to combine the two known types of particle filters, magnetic and electrostatic, for filtering a laser ablation plume, because the results would be merely additive, and no more than expected by one skilled in the art. This is particularly so in view of Flynn's suggestion to combine these two known types of particle filters.

Claims 19-20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Richard Bueker
Primary Examiner
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